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Eletrônica para Informática

Códigos Numéricos Binários



Decimal	BCD 8 4 2 1	Excesso-3
	DCBA	$E_3E_2E_1E_0$
0	0000	0011
1	0001	0100
2	0010	0101
3	0011	0110
4	0100	0111
5	0101	1000
6	0110	1001
7	0111	1010
8	1000	1011
9	1001	1100



O código 2 entre 5

Dígito Decimal	2 entre 5				
	A	B	C	D	E
0	0	0	0	1	1
1	0	0	1	0	1
2	0	0	1	1	0
3	0	1	0	0	1
4	0	1	0	1	0
5	0	1	1	0	0
6	1	0	0	0	1
7	1	0	0	1	0
8	1	0	1	0	0
9	1	1	0	0	0

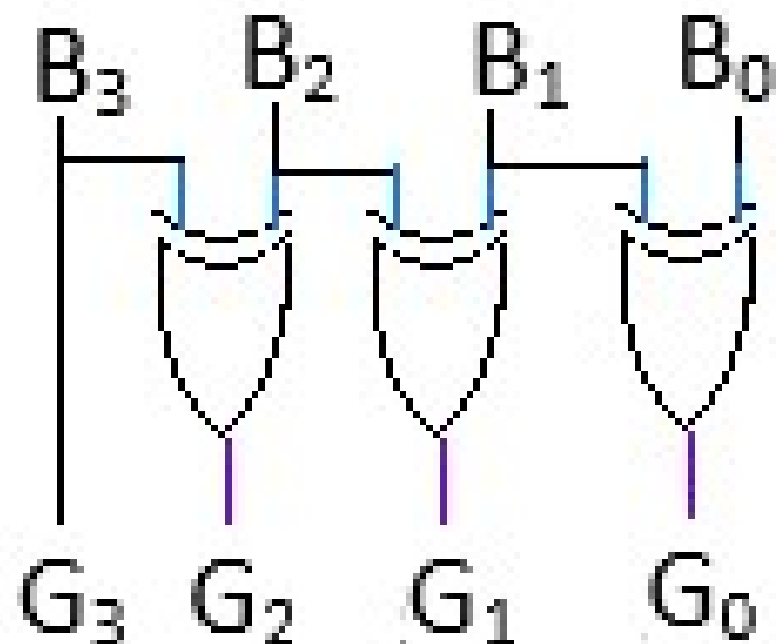
Dígito decimal Código Johnson

	J ₄	J ₃	J ₂	J ₁	J ₀
0	0	0	0	0	0
1	0	0	0	0	1
2	0	0	0	1	1
3	0	0	1	1	1
4	0	1	1	1	1
5	1	1	1	1	1
6	1	1	1	1	0
7	1	1	1	0	0
8	1	1	0	0	0
9	1	0	0	0	0



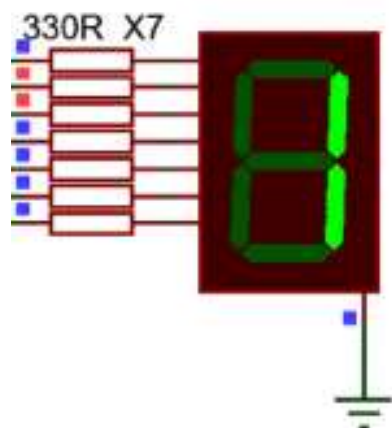
Dígito decimal Código Gray

	$G_3G_2G_1G_0$
0	0000
1	0001
2	0011
3	0010
4	0110
5	0111
6	0101
7	0100
8	1100
9	1101
10	1111
11	1110
12	1010
13	1011
14	1001
15	1000





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ENTRADAS BCD				SAIDAS DISPLAY 7SEG CATODO COMUM							DISPLAY
A	B	C	D	a	b	c	d	e	f	g	
0	0	0	0	1	1	1	1	1	1	0	0
0	0	0	1	0	1	1	0	0	0	0	1
0	0	1	0	1	1	0	1	1	0	1	2
0	0	1	1	1	1	1	1	0	0	1	3
0	1	0	0	0	1	1	0	0	1	1	4
0	1	0	1	1	0	1	1	1	0	1	5
0	1	1	0	1	0	1	1	1	1	1	6
0	1	1	1	1	1	1	0	0	0	0	7
1	0	0	0	1	1	1	1	1	1	1	8
1	0	0	1	1	1	1	1	0	1	1	9



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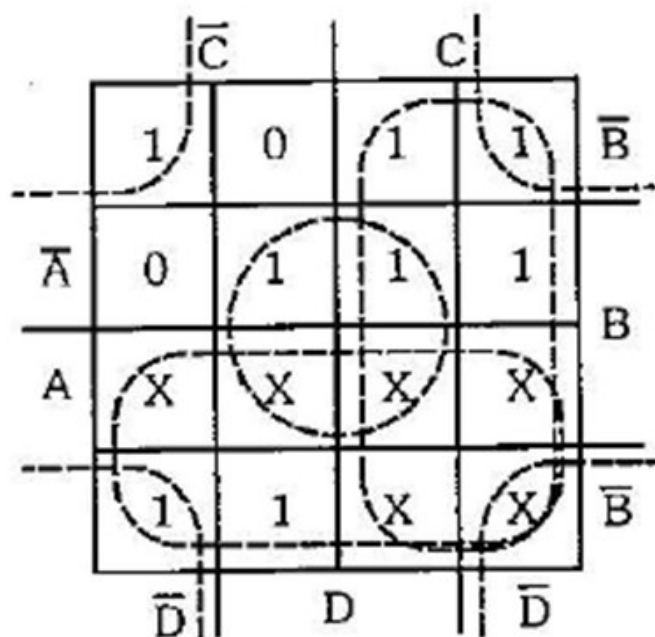
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A	B	C	D	a	b	c	d	e	f	g
0	0	0	0	1	1	1	1	1	1	0
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	0	1	1	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	0	1	0	1	1	1	1	1
0	1	1	1	1	1	1	0	0	0	0
1	0	0	0	1	1	1	1	1	1	1
1	0	0	1	1	1	1	1	0	1	1
1	0	1	0	x	x	x	x	x	x	x
1	0	1	1	x	x	x	x	x	x	x
1	1	0	0	x	x	x	x	x	x	x
1	1	0	1	x	x	x	x	x	x	x
1	1	1	0	x	x	x	x	x	x	x
1	1	1	1	x	x	x	x	x	x	x

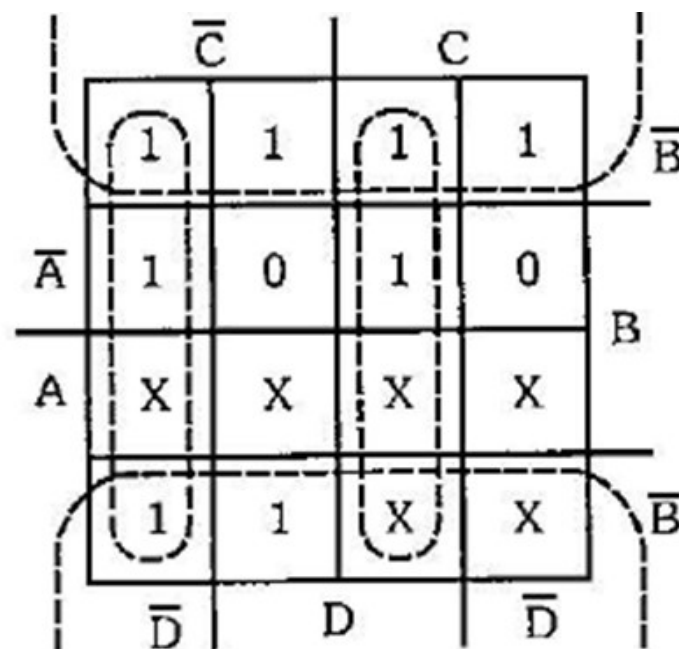


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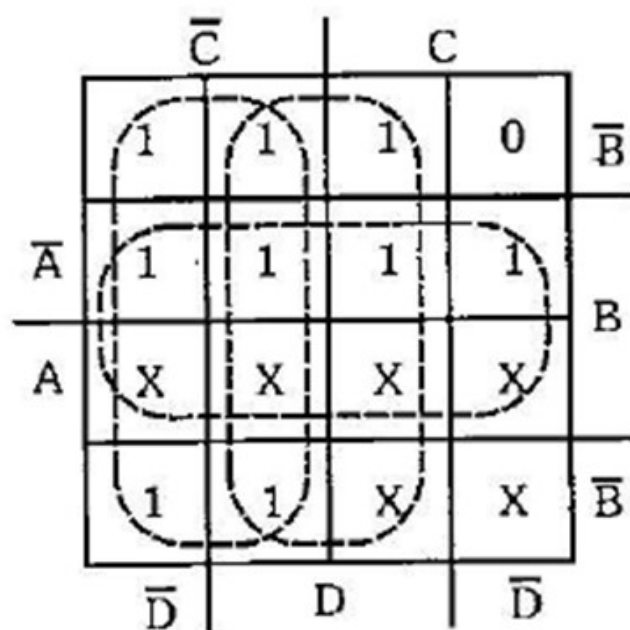
A		B		C		D		a
0		0		0		0		1
0		0		0		1		0
0		0		1		0		1
0		0		1		1		1
0		1		0		0		0
0		1		0		1		1
0		1		1		0		1
0		1		1		1		1
1		0		0		0		1
1		0		0		1		1
1		0		1		0		x
1		0		1		1		x
1		1		0		0		x
1		1		0		1		x
1		1		1		0		x
1		1		1		1		x



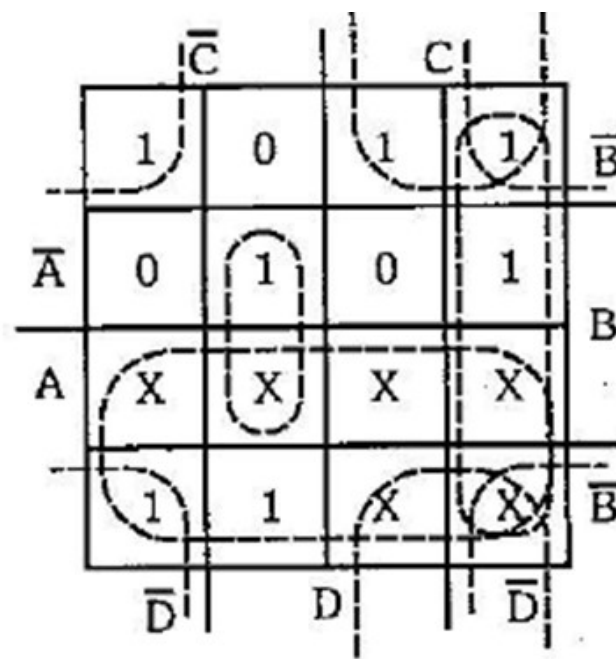
(a) $a = A + C + BD + \bar{B}\bar{D}$
ou $a = A + C + B \odot D$



(b) $b = \bar{B} + \bar{C}\bar{D} + CD$
ou $b = \bar{B} + C \odot D$



(c) $c = B + \bar{C} + D$



(d) $d = A + \bar{B}\bar{D} + \bar{B}C + C\bar{D} + B\bar{C}D$



	\bar{C}	C	
\bar{B}	1	0	0
B	0	0	0
A	X	X	X
\bar{B}	1	0	X
\bar{D}		D	\bar{D}

(e) $e = \bar{B}\bar{D} + C\bar{D}$

	\bar{C}	C	
\bar{B}	1	0	0
B	1	1	0
A	X	X	X
\bar{B}	1	1	X
\bar{D}		D	\bar{D}

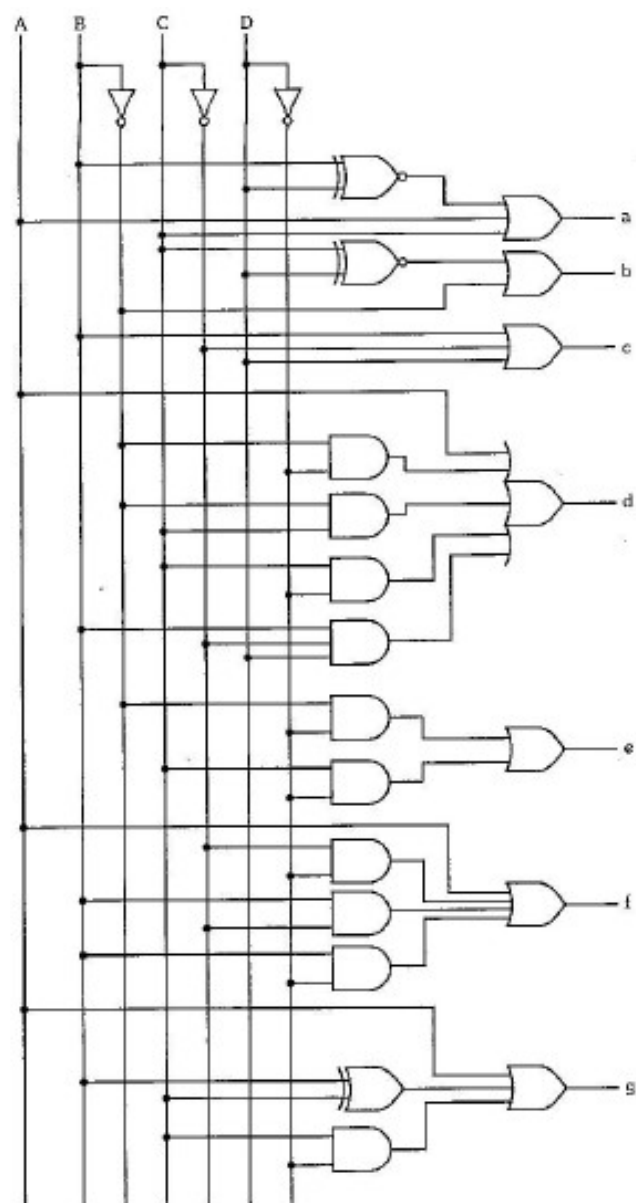
(f) $f = A + \bar{C}\bar{D} + B\bar{C} + B\bar{D}$



		\bar{C}		C		
		0	0	1	1	
\bar{A}	A	1	1	0	1	\bar{B}
		X	X	X	X	B
		1	1	X	X	\bar{B}
		\bar{D}	D	\bar{D}	D	

(g) $g = A + B\bar{C} + \bar{B}C + C\bar{D}$

ou $g = A + B \oplus C + C\bar{D}$





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TAREFA

a) Projete um decodificador de código Excesso_3 para código BCD. Simplifique utilizando mapas de Karnaugh (manuscrito) e realize a simulação no software Proteus . Envie , se possível, o arquivo .pdf contendo o desenvolvimento do projeto e um vídeo evidenciando o aluno, a máquina e a simulação do funcionamento no Proteus.

TABELA DE EQUIV. DOS CÓDIGOS

Decimal	Excesso-3	BCD
	$E_3E_2E_1E_0$	$8\ 4\ 2\ 1$ DCBA
0	0011	0000
1	0100	0001
2	0101	0010
3	0110	0011
4	0111	0100
5	1000	0101
6	1001	0110
7	1010	0111
8	1011	1000
9	1100	1001



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TAREFA

a) Projete um decodificador de código Excesso_3 para código BCD. Simplifique utilizando mapas de Karnaugh (manuscrito) e realize a simulação no software Proteus (OBRIGATÓRIA A UTILIZAÇÃO DE SUBCIRCUIT) . Envie , se possível, o arquivo .pdf contendo o desenvolvimento do projeto e um vídeo evidenciando o aluno, a máquina e a simulação do funcionamento no Proteus.

TABELA VERDADE - KARNAUGH

EXCESSO_3				BCD			
E3 ▼	E2 ▼	E1 ▼	E0 ▼	D ▼	C ▼	B ▼	A ▼
0	0	0	0	X	X	X	X
0	0	0	1	X	X	X	X
0	0	1	0	X	X	X	X
0	0	1	1	0	0	0	0
0	1	0	0	0	0	0	1
0	1	0	1	0	0	1	0
0	1	1	0	0	0	1	1
0	1	1	1	0	1	0	0
1	0	0	0	0	1	0	1
1	0	0	1	0	1	1	0
1	0	1	0	0	1	1	1
1	0	1	1	1	0	0	0
1	1	0	0	1	0	0	1
1	1	0	1	x	x	x	x
1	1	1	0	x	x	x	x
1	1	1	1	x	x	x	x

TABELA DE EQUIV. DOS CÓDIGOS

Decimal	Excesso-3	BCD
	E ₃ E ₂ E ₁ E ₀	8 4 2 1 DCBA
0	0011	0000
1	0100	0001
2	0101	0010
3	0110	0011
4	0111	0100
5	1000	0101
6	1001	0110
7	1010	0111
8	1011	1000
9	1100	1001



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TABELA VERDADE - KARNAUGH

EXCESSO_3				
E3 ▼	E2 ▼	E1 ▼	E0 ▼	D
0	0	0	0	X
0	0	0	1	X
0	0	1	0	X
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	1
1	1	0	1	x
1	1	1	0	x
1	1	1	1	x



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TABELA VERDADE - KARNAUGH

EXCESSO_3				
E3 ▼	E2 ▼	E1 ▼	E0 ▼	C
0	0	0	0	X
0	0	0	1	X
0	0	1	0	X
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	x
1	1	1	0	x
1	1	1	1	x